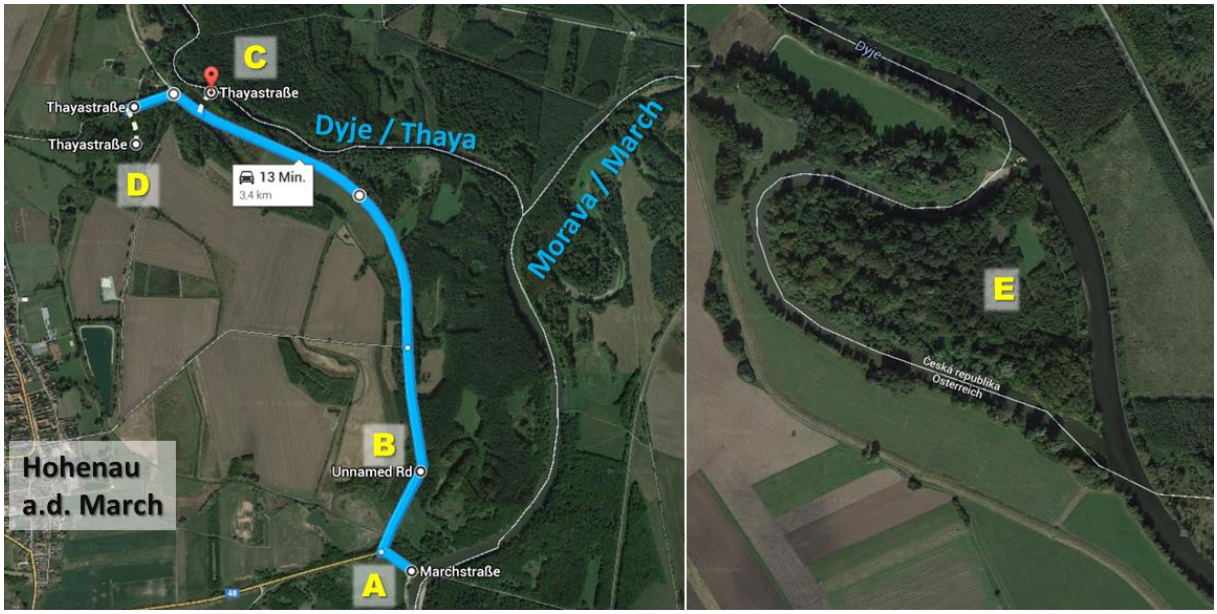
Field excursion 1: ERRC2014 – SEE River Project Final Event

Lower Thaya river - Integrative river restoration and flood protection

Overview on the study area *Points of excursion (A-E)*

Content



Detailed map of the study area (A – E)

1. Area and overview

The River Thaya (in Czech Dyje) is the border river between Austria and the Czech Republic. In its lower section, notably in the confluence area with the River Morava/March, this - formerly meandering lowland river – has still high ecological value at terrestrial and aquatic ecosystems.

Major regulation works in the 1970s-80s have triggered bed erosion and a silting up of cut-off meanders. The fall of the “Iron Curtain” facilitated first restorations in the 1990s with various effects in the riparian border zone, including the removal of bank protection and the one-sided re-opening of a disconnected meander: The built result, however, triggered an inflow of sediments at the inlet structure.

The polder Soutok is a unique area at the confluent of the two rivers Morava and Dyje. It is acting as a retention area during floods to mitigate flood peaks and the effects of flooding in the catchment. It is of high ecological value showing great diversity of habitats as well as terrestrial and aquatic ecosystems and is a very sensitive wetland area.

Aerial photographs of the Polder Soutok area

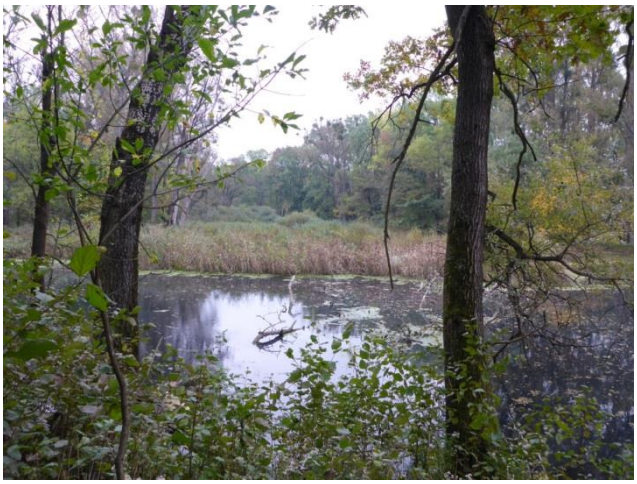
2. Points of excursion

A. Hohenau an der March – border bridge Austria – Slovakia at River Morava

Pictures of the border bridge Austria – Slovakia at the River Morava

B. Austrian Natural Forest Reserves Network - Moravka Natural Forest Reserve

Naturwaldreservat Moravka (Hohenau)



The Austrian Natural Forest Reserves Network

The Austrian Natural Forest Reserves Programme is a specific approach of voluntary contribution to conservation of forest biodiversity. This programme is based on the concept of nature conservation by contracts under private law, signed by forest owners and the Republic of Austria. The forest owners commit themselves to omit any utilisation which may have negative effects on the reserves, with the exception of necessary hunting activities. The network of reserves is managed by the Federal Research and Training Centre for Forests.

Contract principles

- Contract based on voluntary participation
- Long-term concept (minimum 20 years)
- Eligibility to opt out from the contract under special conditions
- Annual compensation as an alternative to normal forest management

- Participation for money of the owner in plot management and monitoring

The continuity of the protection status is guaranteed by the option of the Republic of Austria to extend the contract for another 20 years. In contrast to enacted protected areas the participation of the individual forest owner is always voluntary. He remains the owner of the estate and of the forest.

Establishment and management

First step in the establishment of a natural forest reserve is an expert opinion being an integral part of the contract. The expert opinion substantiates the eligibility of a forest plot for natural reserve and documents the status at the moment of the establishment. The compensation as a yearly payment is calculated by the potential yield of the forest stands.

Monitoring

The long-term securing of the network requires regular monitoring and maintenance of the plots. During regular inspections visible changes of the forest stand are documented. Control inspections are also a possibility to get in touch with the forest owner.

Moravka Natural Forest Reserve

size:	11 hectares
forests:	Salicetum cinereae, Fraxino pannonicae-Ulmetum, Fraxino-Populetum
duration:	1998-2018, extension of the contract is possible

Why did the Foundation Prince Liechtenstein take part in this program?

- This type of vegetation is very rare in Austria, it exists only along the river March (Thaya).
- Abandoned meander of the March river with a very attractive biodiversity.
- Nature conservation by contract is an important part of our strategy.
- We also would like to know how the forest will develop without forest operations.
- Ecology: We are open minded for cooperations with the government as well as NGO´s.
- The government of Austria or the local government are reliable partners for long-term contracts.
- The income of a forest company is generated not only by cutting trees, but from several areas.
- We would like to improve our corporate image.

C. Riparian strip program at the River Dyje

Riparian strip programat the River Dyje

Contracts (1978) between the Republic of Austria and Foundation Prince Liechtenstein would force the government of Austria to stabilize the river banks. But artificial river bank stabilizations cause problems with the principles of nature conservation in this RAMSAR area.

First discussions about alternatives started during the RAMSAR site evaluation (around 1995).

In 2003, after several years of negotiations, the contract was signed.

Area: 5,400 metres long (3 different parts along the natural banks of Thaya), 30 metres wide, 16 hectares

Austria´s National Forest Reserves Program was the model for calculating the compensation payments. Compensation payment was prepaid for 20 years (EU LIFE-project).

Land losses have to be compensated by the Republic of Austria after 20 years.

Duration: until 2022, the Republic of Austria has an option to extend the contract for another period.

Why did the Foundation Prince Liechtenstein sign this contract?

- One of the most beautiful and natural areas on the Thaya river.
- River bank stabilization is not necessary.
- Land losses will be compensated after 20 years of river development.
- Payment for the stop of forest operations in this strip of land.
- Republic of Austria is a reliable long-term partner.

D. Lunch break in the field – Old oak tree

Place at the old oak tree

E. Cut-off meander Dyje

Inflow structure

Upper end of meander 18: Filled up with sediments after its reconnection © *riocom - Schwingshandl, Zinke*

Length of the meander:

- Meander: 1000m
- Dyje: 450m
- Ratio: 2,22

Morphometric situation at inflow/entrance point: concave bank of Dyje; radius = 310m

Morphometric situation at outflow/exit point: concave bank of Dyje; radius = 370m

Cut off at the inflow point as a consequence of the construction works in 1979-1982. Reconnection as a communicating side arm with a split culvert with a total width of 4m as the inflow structure.

3. Polder Soutok project - European Territorial Cooperation Project Czech Republic – Austria

This cross border project combined integrative flood protection and ecological aspects in the Polder Soutok area. Besides implementing measures to restore the flood protection dams, a concept for restoration of the lower Dyje river was elaborated between February 2009 and December 2013.

The main aims of the project were:

- Improvement of flood protection dams
- Development of a digital terrain model
- Investigation and optimization of the hydrology in the Polder Soutok in terms of flood protection
- Construction of "Wildrettungshügel", rescue areas for game (deers)
- Assessment of a bilaterally harmonized concept for restorating the lower Dyje river

The restoration concept of the river Dyje is based on:

- Ecological assessment using bioindicators (macro-invertebrates, dragonflies and fish)
- Deficit analysis
- Bilateral harmonization of the results
- Bilateral plan of measures for river restoration



The deficit analysis of biological quality elements confirmed system and structural deficits:

- Low percentage of shallow areas (riffles) in the main river
- Poor sediment dynamics in former meanders
- Lack of "dead wood" – woody debris in main river and side arms
- Lack of connections of the side arms and wetlands with the river
- Reconnection of meanders may lead to a loss of habitats of some endangered species but their presence should be secured in other backwaters that remain disconnected, thus allowing to improve the conditions for rheophilic species.

Potential measures

- Reconnection of meanders
- Full integration of selected meanders
- Restoration of the river bank
- Improvement of hydrological conditions
- More woody debris without affecting flood protection

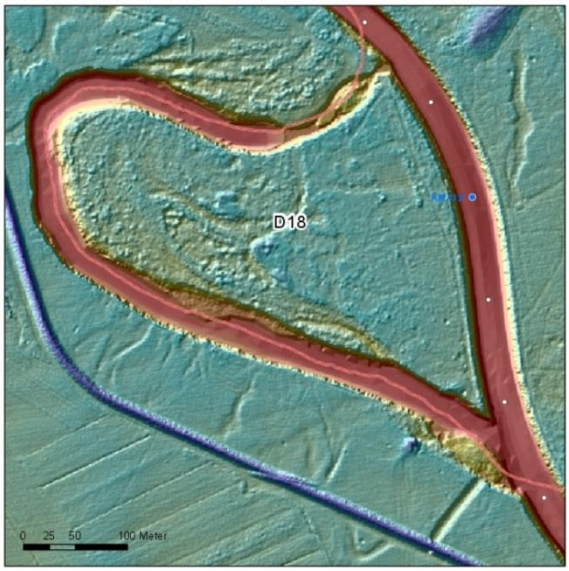
These measures will increase the diversity of habitats and improve the ecological status.

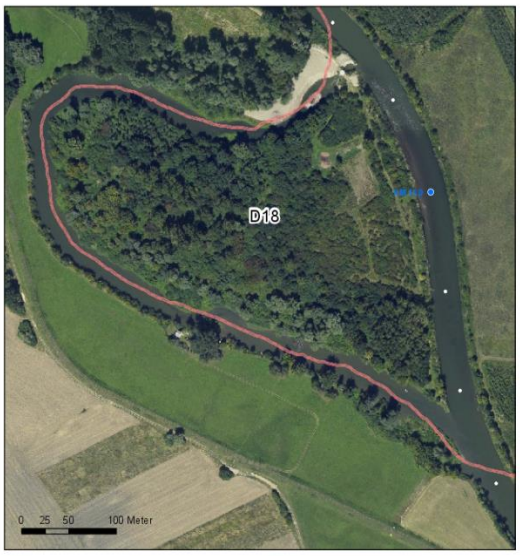
The morphological analysis covered:

- Description of meanders within the project section
- Assessment approach for the feasibility of up- and downstream connections of meanders
- Assessment of the feasibility of a full integration of meanders
- Suitability of a one-sided connection

The evaluation of the biological assessment and the morphological analysis lead to recommendations for the implementation of measures.

The final priorisation of measures is documented in a **bilaterally harmonized plan of measures**.





The project is an example for successful bilateral cooperation between the Czech Republic and Austria analysing and overcoming challenges of flood protection and river restoration!

4. Guides and contact

Field trip hosts and guides:

- *Umweltbundesamt* (Environment Agency Austria)
- *Foundation Prince Liechtenstein*
- *Riocom* Consulting Engineers
- *Povodí Moravy* (Morava river management agency), Czech Republic
- *viadonau* (Austrian waterway agency)

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